



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,160	12/23/1999	SATOSHI KOKUBO	35.C14155	7094
5514	7590	12/31/2003	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			MARKHAM, WESLEY D	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	

1762

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/471,160

Applicant(s)

KOKUBO ET AL.

Examiner

Wesley D Markham

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4 and 6-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 6-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 10/6/2003 (with a certificate of mailing dated 10/2/2003), in which a substitute specification and abstract of the disclosure were submitted, and Claims 1 and 8 were amended. Claims 1, 2, 4, and 6 – 8 are currently pending in U.S. Application Serial No. 09/471,160, and an Office Action on the merits follows.

Drawings

2. The four (4) sheets of formal drawings filed by the applicant on 12/23/1999 are accepted by the examiner.

Specification

3. The substitute specification filed on 10/6/2003 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because a "marked-up copy" of the substitute specification has not been supplied. Specifically, the examiner notes that the applicant states that a marked-up copy of the substitute specification was attached to the response filed on 10/6/2003. However, although the "clean copy" of the substitute specification was received on 10/6/2002, no marked-up copy was received.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Potjer et al. (USPN 5,851,566).
6. Regarding independent **Claims 1 and 8**, Potjer et al. teaches a rinsing / coating method of ejecting a coating liquid over the surface of a member to be coated (e.g., a moving sheet or web (Col.1, lines 4 – 6)) from an elongated, narrow coating orifice / slot (i.e., a slit (Figures 3, 4, and 9, Abstract, and Col.4, lines 31 – 33)) formed at an applicator die “50” (i.e., a coating head (Figures 3, 4, and 9, and Col.4, lines 27 – 35)) and thus forming a coated layer thereon, the method comprising the steps of rinsing an inside of the slit (i.e., manifolds “72” and/or “74”) by stopping a supply of the coating liquid from a coating liquid supply path to the coating head after ejecting the coating liquid, and supplying a rinsing liquid from a rinsing liquid supply path extending to the coating head (Figure 9, Col.7, lines 35 – 67, and Col.8, lines 1 – 17). Additionally, the coating liquid supply path is different from the rinsing liquid supply path, as required by Claims 1 and 8 (see Figure 9 of Potjer et al. and the corresponding description, in which it is clear that the rinsing liquid is supplied from source “134” along a path that passes through valves “138” and into orifices “69”

Art Unit: 1762

and/or “70” in the coating head, and the coating liquid is supplied from a different source “132” along a different path that passes through valves “136” and into orifices “69” and/or “70”). In this case, the “coating liquid supply path” is the path that travels from source “132” through valve “136” and into the coating head, while the “rinsing liquid supply path” is the path that travels from source “134” through valve “138” and into the coating head. Thus, while the two paths are not completely exclusive of each other, the paths are “different”, as required by the applicant’s claims.

Regarding **Claim 2** (which depends from Claim 1), Potjer et al. also teaches supplying the rinsing liquid trace by trace or intermittently to the coating head. Specifically, Potjer et al. teaches starting and then stopping a flow of cleaning solution to the coating head in order to clean manifold “72” (i.e., the manifold associated with the first coating liquid), and then repeating these steps in order to clean manifold “74” (i.e., the manifold associated with the second coating liquid) once one desires to switch back to using the first coating liquid (Col.8, lines 4 – 17). This sequence of starting / stopping / starting, etc. the flow of cleaning solution is equivalent to supplying the cleaning (i.e., rinsing) liquid intermittently to the coating head as required by Claim 2.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1762

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
9. Claims 1, 2, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (AAPA) in view of Asahi Glass Co (JP 10-282329 A).
10. Regarding independent **Claims 1 and 8**, the AAPA teaches a rinsing / coating method of ejecting a coating liquid (i.e., from a coating liquid tank "11") over the surface of a member to be coated "7" from a slit "54" formed at a coating head "5" and thus forming a coated layer "6" thereon, the method comprising the steps of rinsing an inside of the slit "54" by stopping a supply of the coating liquid from a coating liquid supply path to the coating head after ejecting the coating liquid, and supplying a rinsing liquid from a rinsing liquid supply path extending to the coating head (Figure 4 and page 4, lines 6 – 24 of the applicant's specification). Specifically, the AAPA teaches that, in a prior art slit coating device, when the stop time

elongates (i.e., when the coating liquid is stopped from being supplied to the coating head), a rinsing liquid is flowed from a rinsing liquid supply circuit to rinse the tip area of the coating head and the slit area "54", which is equivalent to the inside of the slit (see Figure 4). However, the AAPA does not explicitly teach that the coating liquid supply path is different from the rinsing liquid supply path. Specifically, in the AAPA, the rinsing liquid and the coating liquid flow to the slit / coating head through the same circuit / path (page 4, lines 14 – 20 of the applicant's specification). As such, the rinsing liquid supply path and the coating liquid supply path of the AAPA are essentially the same path (i.e., are not "different"). Asahi Glass Co teaches a similar method of manufacturing a color filter by coating a substrate by supplying an ink (i.e., a coating liquid) to a coating head and, when cleaning is desired, supplying a washing / rinsing liquid to the coating head to remove fouling that cannot be removed by washing from the outside of the coating head (Abstract). In addition, Asahi Glass Co teaches that the coating liquid supply path is different from the rinsing liquid supply path (see, for example, Figure 1, in which the coating liquid travels along a path from a coating source "2", through switching valve "4", to coating head "1", and the washing liquid travels along a different path from a washing source "3", through switching valve "4", to coating head "1"; also see paragraph [0026]). By using this method, a long, stable discharge is ensured, and color filters can be produced in a highly productive manner (Abstract). It would have been obvious to one of ordinary skill in the art to utilize different paths for the coating liquid and the rinsing liquid, as taught by Asahi Glass Co, in the process of the AAPA instead of

using the same path with the reasonable expectation of obtaining the following benefits: (1) simplifying the process due to the relative ease of either supplying a rinsing liquid or a coating liquid from different sources as the situation demands (as taught by Asahi Glass Co), as opposed to having to switch-out the rinsing liquid and coating liquid sources each time rinsing is desired (as suggested by the AAPA), and (2) providing a coating process that achieves a stable discharge over a long period of time, thereby increasing productivity. Regarding **Claim 2**, the combination of the AAPA and Asahi Glass Co does not explicitly teach a method wherein the rinsing liquid is supplied trace by trace or intermittently to the coating head. However, the AAPA does teach that the rinsing liquid is flowed when the “stop time” (i.e., the time during which the coating liquid is not supplied) elongates. The coating liquid is replaced by this rinsing liquid, and then the rinsing liquid is replaced by the coating liquid (page 4, lines 9 – 20 of the applicant’s specification). In other words, the rinsing liquid used in the AAPA does not flow *in perpetuity*. Therefore, it would have been obvious to one of ordinary skill in the art to supply the rinsing liquid to the coating head during every period of elongated stop time, or in other words, between the time periods during which the slit coater is being used for coating, with the reasonable expectation of successfully and advantageously preventing the coating liquid from being solidified at the tip of the coating head after each and every time the slit coater is utilized for coating. These repeated rinsing liquid supplying steps are equivalent to supplying the rinsing liquid intermittently as required by Claim 2. Regarding **Claim 7** (which depends from Claim 1), the AAPA also teaches that the

Art Unit: 1762

rinsing liquid is a solvent of the coating liquid (page 4, lines 10 – 11 of the applicant's specification).

11. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (AAPA) in view of Asahi Glass Co (JP 10-282329 A), and in view of Poag et al. (USPN 5,958,517).

12. The combination of the AAPA and Asahi Glass Co teaches all the limitations of **Claims 2 and 6** as set forth above in paragraph 10, except for a method wherein the rinsing liquid is supplied trace by trace or intermittently to the coating head (Claim 2), or more specifically, a method wherein when the supply of the coating liquid is stopped, the rinsing liquid is supplied to the coating head periodically (Claim 6). The AAPA is silent as to whether the rinsing liquid is supplied periodically / intermittently or continuously during the time period(s) in which the supply of coating liquid is stopped. However, it is the purpose of the rinsing liquid of the AAPA to prevent the coating liquid from being solidified at the tip / slit of the coating head (page 4, lines 6 – 12 of the applicant's specification). Poag et al. teaches that, in the art of supplying a cleaning fluid to a coating liquid delivery orifice in order to prevent the coating liquid from contaminating the orifice (i.e., an orifice cleaning process analogous to that taught by the AAPA) (Col.4, lines 42 – 60), it was known at the time of the applicant's invention to pulse the flow of cleaning fluid by opening and closing the cleaning fluid valve (i.e., to periodically supply the rinsing liquid) to provide cleaning agitation and facilitate the cleaning of surfaces (Col.6, lines 51 – 54). Therefore, it

Art Unit: 1762

would have been obvious to one of ordinary skill in the art to periodically supply (i.e., pulse) the rinsing liquid of the combination of the AAPA and Asahi Glass Co to the coating head when the supply of coating liquid is stopped with the reasonable expectation of successfully and advantageously improving the cleaning efficiency of the rinsing process.

13. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata et al. (USPN 5,817,441) in view of the combination of the applicant's admitted prior art (AAPA) and Asahi Glass Co (JP 10-282329 A).

14. Regarding **Claim 4**, Iwata et al. teaches a method of manufacturing a color filter substrate, the method comprising the steps of coating a photosensitive resinous composition over a substrate by a die coating method, obtaining a black matrix pattern by forming a pattern on the photosensitive resinous composition, and applying a coloring ink so as to fill in the black matrix pattern gap (Abstract, Figures 1A – 1E, Col.5, lines 25 – 67, and Col.6, lines 1 – 9). Iwata et al. does not teach the specifics of the die coating method used to coat the photosensitive resinous composition over a substrate (i.e., that the coating is performed using the method of Claim 1). However, the combination of the AAPA and Asahi Glass Co teaches all the specifics of the slit (i.e., die) coating method recited by the applicant in Claim 1 (see paragraph 10 above). The AAPA also teaches that such a slit coating method is advantageously used to deposit a photosensitive resin in the production of a color filter (i.e., the application taught by Iwata et al.) (page 3, lines 11 – 18 of the

applicant's specification). It would have been obvious to one of ordinary skill in the art to utilize the slit coating / rinsing method as claimed by the applicant in Claim 1 and taught by the combination of the AAPA and Asahi Glass Co to deposit the photosensitive resinous composition of Iwata et al. with the reasonable expectation of (1) success, as both Iwata et al. and the AAPA teach that such a photosensitive resinous composition can successfully be deposited by slit / die coating, and (2) obtaining the benefits of using the slit coating / rinsing process taught by the combination of the AAPA and Asahi Glass Co, such as preventing coating liquid from being solidified at the tip of the coating head.

15. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Potjer et al. (USPN 5,851,566) in view of Poag et al. (USPN 5,958,517).

16. Potjer et al. teaches all the limitations of **Claim 6** as set forth above in paragraph 6, except for a method wherein, when the supply of the coating liquid is stopped, the rinsing liquid (i.e., the cleaning liquid) is supplied to the coating head periodically. Specifically, Potjer et al. is silent as to whether the cleaning liquid is supplied periodically / intermittently or continuously during the time period(s) in which the supply of coating liquid is stopped. However, it is the purpose of the cleaning liquid of Potjer et al. to clean and remove coating liquid from the inside of the applicator die (i.e., the coating head) (Col.8, lines 4 – 6). Poag et al. teaches that, in the art of supplying a cleaning fluid to a coating liquid delivery orifice in order to clean the orifice (i.e., an orifice cleaning process analogous to that taught by Potjer et al.)

(Col.4, lines 42 – 60), it was known at the time of the applicant's invention to pulse the flow of cleaning fluid by opening and closing the cleaning fluid valve (i.e., to periodically supply the rinsing liquid) to provide cleaning agitation and facilitate the cleaning of surfaces (Col.6, lines 51 – 54). Therefore, it would have been obvious to one of ordinary skill in the art to periodically supply (i.e., pulse) the cleaning liquid of Potjer et al. to the coating head when the supply of coating liquid is stopped with the reasonable expectation of successfully and advantageously improving the efficiency of the cleaning process.

17. Potjer et al. teaches all the limitations of **Claim 7** as set forth above in paragraph 6, except for a method wherein the rinsing liquid (i.e., the cleaning liquid) is a solvent of the coating liquid. Specifically, Potjer et al. is silent as to the nature of the cleaning liquid. However, Poag et al. teaches that, in the art of supplying a cleaning fluid to a coating liquid delivery orifice in order to clean the orifice (i.e., an orifice cleaning process analogous to that taught by Potjer et al.) (Col.4, lines 42 – 60), it was known at the time of the applicant's invention to utilize a solvent of the coating liquid as the cleaning fluid (Col.1, lines 45 – 46, Col.2, lines 2 – 5, and Col.4, lines 50 – 60). It would have been obvious to one of ordinary skill in the art to utilize a solvent of the coating liquid of Potjer et al. as the cleaning liquid in Potjer et al. with the reasonable expectation of (1) success, as Poag et al. teaches that such a process can be successfully performed, and (2) obtaining the benefits of using a solvent of the coating liquid as the cleaning liquid, such as the ability to dissolve any dry or solidified coating material present at the coating head. This benefit is clearly

Art Unit: 1762

applicable to the coating / cleaning process of Potjer et al. and would have been readily recognized by one of ordinary skill in the art.

18. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Potjer et al.

(USPN 5,851,566) in view of the applicant's admitted prior art (AAPA).

19. Potjer et al. teaches all the limitations of **Claim 7** as set forth above in paragraph 6,

except for a method wherein the rinsing liquid (i.e., the cleaning liquid) is a solvent of the coating liquid. Specifically, Potjer et al. is silent as to the nature of the cleaning liquid. However, the AAPA teaches that it was known in the art at the time of the applicant's invention to utilize a solvent of the coating liquid as the rinsing (i.e., cleaning) liquid in a coating head cleaning process (i.e., a process analogous to that of Potjer et al.'s) (page 4, lines 10 – 11 of the applicant's specification). It would have been obvious to one of ordinary skill in the art to utilize a solvent of the coating liquid of Potjer et al. as the cleaning liquid in Potjer et al. with the reasonable expectation of (1) success, as the AAPA teaches that such a process can be successfully performed, and (2) obtaining the benefits of using a solvent of the coating liquid as the cleaning liquid, such as the ability to dissolve any dry or solidified coating material present at the coating head. This benefit is clearly applicable to the coating / cleaning process of Potjer et al. and would have been readily recognized by one of ordinary skill in the art.

Response to Arguments

20. Applicant's arguments filed on 10/6/2003 have been fully considered but they are not persuasive.
21. Regarding the applicant's argument drawn to the 35 U.S.C. 102 rejection based on the applicant's admitted prior art, this argument is moot in view of the new grounds of rejection presented above.
22. The applicant also states that, in the Potjer reference, the rinsing liquid and the coating liquid appear to share passageways en route to the coating head. The applicant then argues that Potjer cannot anticipate the present invention, namely the separate rinsing liquid and coating liquid supply paths. In response, the examiner agrees with the applicant that the rinsing liquid and the coating liquid appear to share certain passageways en route to the coating head in the process of Potjer (see Figure 9). However, the applicant's claims, as presently recited, do not exclude such a situation. The applicant's claims simply require that the coating liquid supply path be "different from" the rinsing liquid supply path. In Potjer, the coating liquid supply path is different from the rinsing liquid supply path, as required by the claims. For example, see Figure 9 of Potjer et al. and the corresponding description, in which it is clear that the rinsing liquid is supplied from source "134" along a path that passes through valves "138" and into orifices "69" and/or "70" in the coating head, and the coating liquid is supplied from a different source "132" along a different path that passes through valves "136" and into orifices "69" and/or "70". In this case, the "coating liquid supply path" is the path that travels from source "132" through valve

Art Unit: 1762

"136" and into the coating head, while the "rinsing liquid supply path" is the path that travels from source "134" through valve "138" and into the coating head. Thus, while the two paths are not completely exclusive of each other, the paths are "different", as required by the applicant's claims. The examiner stresses that the applicant's claims do not require the coating liquid and the rinsing liquid supply paths to be completely exclusive of (i.e., separated from) each other.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fujino et al. (JP 08-108120 A) teaches a method of alternately supplying a cleaning liquid and a coating liquid to a coating die through different paths.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1762

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


WDM

Wesley D Markham
Examiner
Art Unit 1762


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700